SONY

2-546-777-**31**(1)

AIT Drive

User's Guide

AIT-1 Turbo TAPE DRIVE

SDX-450V

AIT-E Turbo TAPE DRIVE

SDX-250V

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Your SDX-250V, SDX-450V is assigned a Model No. ATDNA2 for regulatory compliance certifications. The number is indicated on the model number label on your drive along with the rated voltage and current.

VORSICHT

Für Kunden in Deutschland

Diese Ausrüstung erfüllt die Europäischen EMC-Bestimmungen für die Verwendung in folgender / folgenden Umgebung(en):

- Wohngegenden
- Gewerbegebiete
- Leichtindustriegebiete

(Diese Ausrüstung erfüllt die Bestimmungen der Norm EN55022, Klasse B.)

사용자 안내문

이 기기는 가정용으로 전자파 적합등록을 한 기기로서
주거지역에서는 물론 모든 지역에서 사용할 수 있습니다.

기기의 명칭 (모델명)	: ATDNA2
인증받은자의 상호	: SONY KOREA Corp.
제조년월일	: 별도표시
제조자/제조국가	: SONY CORP./일본,중국

IMPORTANT SAFEGUARDS

For your protection, please read these safety instructions completely before operating the appliance, and keep this manual for future reference.

Carefully observe all warnings, precautions and instructions on the appliance, or the one described in the operating instructions and adhere to them.

USE

Power Sources – This unit should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of electrical power, consult your dealer or local power company.

For the unit with a three-wire grounding type ac plug:
If you are unable to insert the plug into the outlet, contact your electrician to have a suitable plug installed. Do not defeat the safety purpose of the grounding plug.

AC Power cord: (for AC mains operating unit only)
The AC power cord should have appropriate safety approvals or marking for the country in which the equipment will be used. Consult your dealer or local power company.

Cleaning – Unplug the unit from the wall outlet before cleaning or polishing it. Do not use liquid cleaners or aerosol cleaners.
Use a cloth lightly dampened with water for cleaning the exterior of the unit.

Object and Liquid Entry – Never push objects of any kind into the unit through openings as they may touch dangerous voltage points or short out parts that could result in a fire or electric shock. Never spill liquid of any kind on the unit.

INSTALLATION

Water and Moisture – Do not use power-line operated units near water - for example, near a bathtub, washbowl, kitchen sink, or laundry tub, in a wet basement, or near a swimming pool, etc.

Power-Cord Protection – Route the power cord so that it is not likely to be walked on or pinched by items placed upon or against them, paying particular attention to the plugs, receptacles, and the point where the cord exits from the appliance.

Accessories – Do not place the unit on an unstable cart, stand, tripod, bracket, or table. The unit may fall, causing serious injury to a child or an adult, and serious damage to the unit. Use only a cart stand tripod, bracket, or table recommended by the manufacturer.

Ventilation – The slots and openings in the cabinet are provided for necessary ventilation. To ensure reliable operation of the unit, and to protect it from overheating, these slots and openings must never be blocked or covered.

- Never cover the slots and openings with a cloth or other materials.
- Never block the slots and openings by placing the unit on a bed, sofa, rug or other similar surface.
- Never place the unit in a confined space, such as a bookcase, or built-in cabinet, unless proper ventilation is provided.

SERVICE

Damage Requiring Service – Unplug the unit from the wall outlet and refer servicing to qualified service personnel under the following conditions:

- When the power cord or plug is damaged or frayed.
- If liquid has been spilled or objects have fallen into the unit.
- If the unit has been exposed to rain or water.
- If the unit has been subject to excessive shock by being dropped, or the cabinet has been damaged.
- If the unit does not operate normally when following the operating instructions. Adjust only those controls that are specified in the operating instructions. Improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the unit to normal operation.
- When the unit exhibits a distinct change in performance - this indicates a need for service.

Servicing – Do not attempt to service the unit yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer to all servicing to qualified service personnel.

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- Sony cannot accept liability for data written to cartridges lost as a result of using this product.
- Sony bears no responsibility for any financial damages, lost profits, or claims made by third parties arising from the use of this product.

Overview

The Sony SDX-450V and SDX-250V drives are high capacity data storage devices using Advanced Intelligent tape (AIT) technology. The SDX-450V and SDX-250V drives achieve high data reliability through Read-After-Write, an additional level of Error Correction Code, and other features.

The Sony SDX-450V and SDX-250V drives store data on tape using standard formats called AIT (Advanced Intelligent Tape) and ALDC formats.

Introduction

About AIT Drives

The SDX-450V is an internal AIT drive unit that uses data cartridges conforming to the AIT-1 Turbo format. The SDX-250V is an internal AIT drive unit that uses data cartridges conforming to the AIT-E Turbo format. The SDX-450V supports AIT-E Turbo, AIT-1 Turbo and AIT-1 formats. The SDX-250V supports only AIT-E Turbo format.

Features

The AIT Drive Unit SDX-450V has the following features:

- Supports reading and writing to data cartridges conforming to the AIT-E Turbo, AIT-1 Turbo and AIT-1 formats.
- The third-level error correction code guarantee high data reliability.
- Data compression provides 104 gigabytes of storage on 186 m tape-length AIT-1 Turbo data cartridge.[*1]

  The native capacity is 40 gigabytes of storage on 186 m tape-length AIT-1 Turbo data cartridge.
- Stored data are automatically checked for compression.
- Wide Ultra SCSI LVD/SE interface is fully supported for host computer access.

The AIT Drive Unit SDX-250V has the following features:

- Supports reading and writing to data cartridges conforming to the AIT-E Turbo format.
- The third-level error correction code guarantee high data reliability.
- Data compression provides 52 gigabytes of storage on 98 m tape-length AIT-E Turbo data cartridge.[*1]

  The native capacity is 20 gigabytes of storage on 98 m tape-length AIT-E Turbo data cartridge.
- Stored data are automatically checked for compression.
- Wide Ultra SCSI LVD/SE interface is fully supported for host computer access.

[*1] This is assuming 2.6 : 1 compression ratio.
The degree of data compression attained while recording data varies according to system environment and data type.

Precautions

Installation

Avoid placing the drive in a location subject to:

– high humidity

– high temperature

– mechanical shock and vibration

– direct sunlight

* For details, see “Specifications” on page 29.

Operation

- Do not move the drive while it is operating. It may cause malfunction.
- Avoid exposing the drive to sudden changes from a low to high temperatures. This may cause water condensation to collect inside the drive. If the ambient temperature should suddenly rise while the drive is turned on, wait at least one hour before turning on the drive. If you attempt to operate the drive immediately after a sudden increase in temperature, a malfunction may occur.
- Turning off the power to the drive while they are writing to tape may cause the tape to become unreadable. All previously negotiated parameters will be lost, whenever power to the drive is cycled.

Transportation

- Keep the original packing materials to facilitate safe transportation of the drive.
- Always remove the tape/media cartridge before moving the drive. After removing the drive from the computer, repack the drive into its original packing.

Useable Cartridges

The SDX-450V can be used with data cartridges marked with the AIT-E Turbo, AIT-1 Turbo or AIT-1 logo.

The SDX-250V can be used with data cartridges marked with the AIT-E Turbo logo.

Note

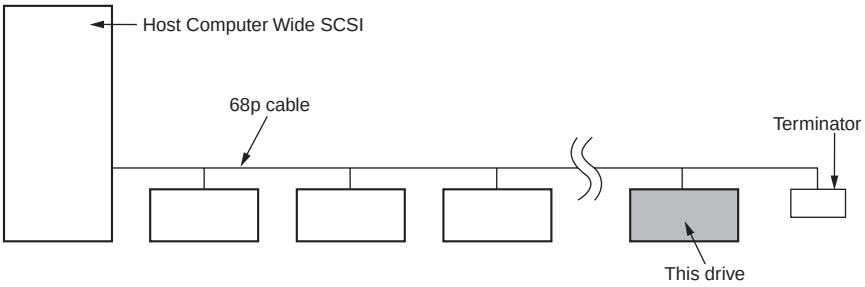
- Be sure to use only the cartridges designed specifically for AIT.
- Do not use anything but AIT cartridges with this system, as doing so can damage the AIT drive. Although commercially available 8mm videotapes resemble AIT cartridges in appearance, they have entirely different specifications and cannot be used.

SCSI Termination

The SDX-450V and SDX-250V conform to the Microsoft PC97 standard, which requires the internal (naked) drive to be terminated with an external terminator.

Microsoft PC97 SCSI requirements

SCSI peripherals must not terminate the bus. Both internal and external cable ends are instead terminated by plug-in connectors.



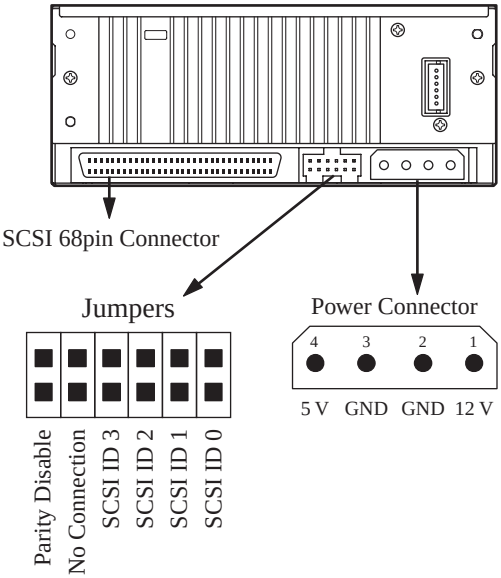
Example of SCSI setup

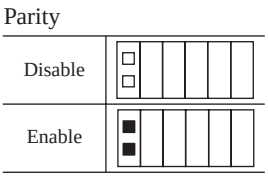
Installation

SCSI Connection/Setting the SCSI ID

SCSI ID

SCSI ID	P.D.	N.C.	3	2	1	0
0			■	■	■	■
1			■	■	■	□
2			■	■	□	■
3			■	■	□	□
4			■	□	■	■
5			■	□	■	□
6			■	□	□	■
7			■	□	□	□
8			□	■	■	■
9			□	■	■	□
10			□	■	□	■
11			□	■	□	□
12			□	□	■	■
13			□	□	■	□
14			□	□	□	■
15			□	□	□	□



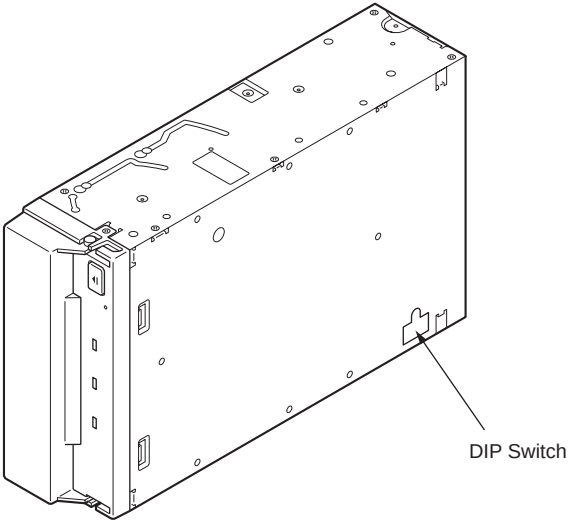


Note : ■ = CLOSED/Jumper
■ = OPEN/Jumper not installed
□ = Don't care

Parity Disable Jumper

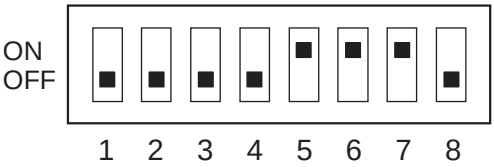
Parity check function can be disabled by Jumper. Parity check is disabled while left end jumper is installed. Parity generate function is always enabled.

Option Switches (DIP Switch)



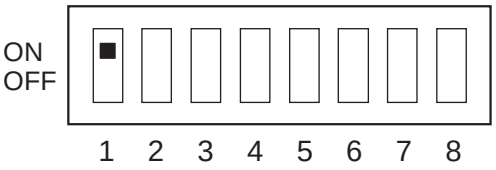
DIP Switch Positions

Default



1 Drive Mode (OFF)
2 Drive Mode (OFF)
3 Drive Mode (OFF)
4 Drive Mode (OFF)
5 Terminator Power (ON)
6 Periodic Cleaning Req (ON)
7 DC Control (1) (ON)
8 DC Control (2) (OFF)

DR (Disaster Recovery*) Mode



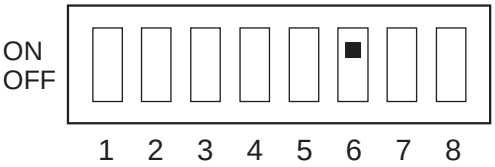
1 Drive Mode (ON)
2 Drive Mode
3 Drive Mode
4 Drive Mode
5 Terminator Power
6 Periodic Cleaning Req
7 DC Control (1)
8 DC Control (2)

* In Disaster Recovery Mode, the drive enters the DR Standby Mode 15 seconds after you insert a write-protected tape into the drive, and all the drive LED blink. If you restart the drive while the LED are blinking, it starts as a CD-ROM device.

For details about the Disaster Recovery Mode, refer to the instruction manual that came with the application software you are using.

Cleaning Request Mode

Periodic cleaning requests can be enabled by a DIP switch.



1 Drive Mode
2 Drive Mode
3 Drive Mode
4 Drive Mode
5 Terminator Power
6 Periodic Cleaning Req (ON)
7 DC Control (1)
8 DC Control (2)

When switch 6 is ON, cleaning requests are enabled. When enabled, the "CLEANING REQUEST" LED on the front panel lights after every 100 hours of operation.

When this LED lights, clean the drive with a head cleaning cartridge.

Note

To maintain the drive in optimum condition in environments affected by dust and other contaminants, we recommend keeping cleaning requests enabled.

Terminator Power Control DIP switch

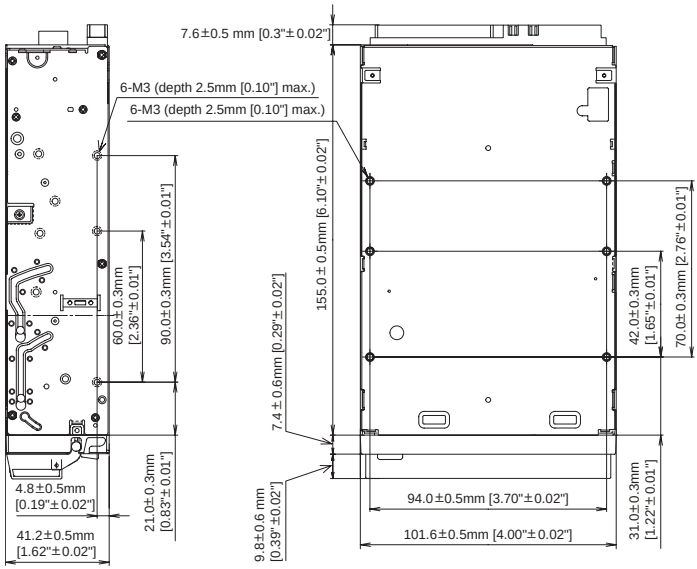
This DIP switch determines whether terminator power is supplied to the SCSI bus. To enable terminator power, set position 5 [Terminator Power] switch to ON.

Data Compression Control DIP switch

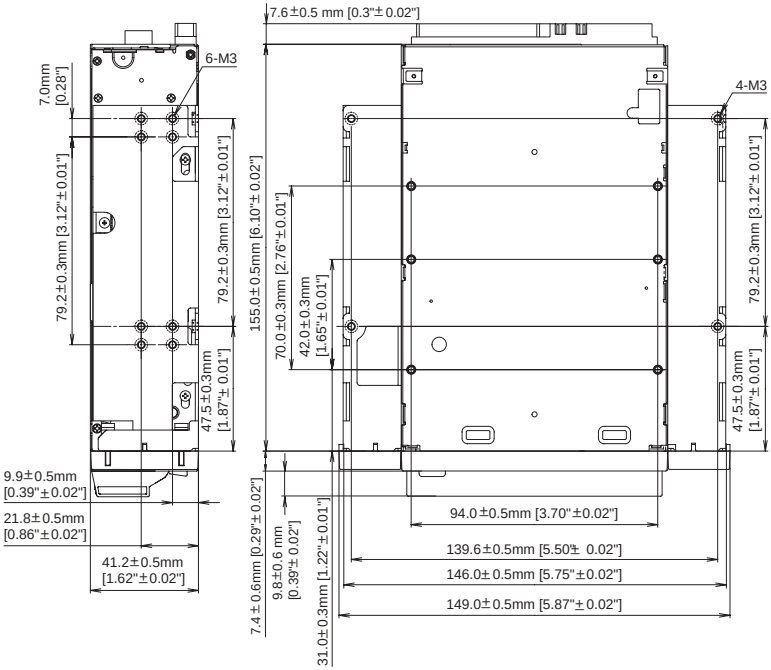
Data compression can be selected by DIP switches. Data compression is enabled while position 7 [DC Control (1)] is ON. Control by host can be disabled when position 8 [DC Control (2)] is ON.

Mounting Holes

For 3.5" Standard Height



For 5.25" Half Height

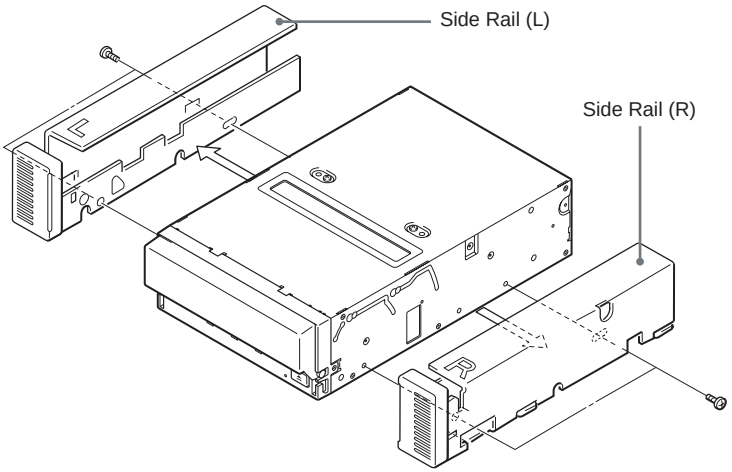


Reconfiguring from 5.25" Model to 3.5" Model

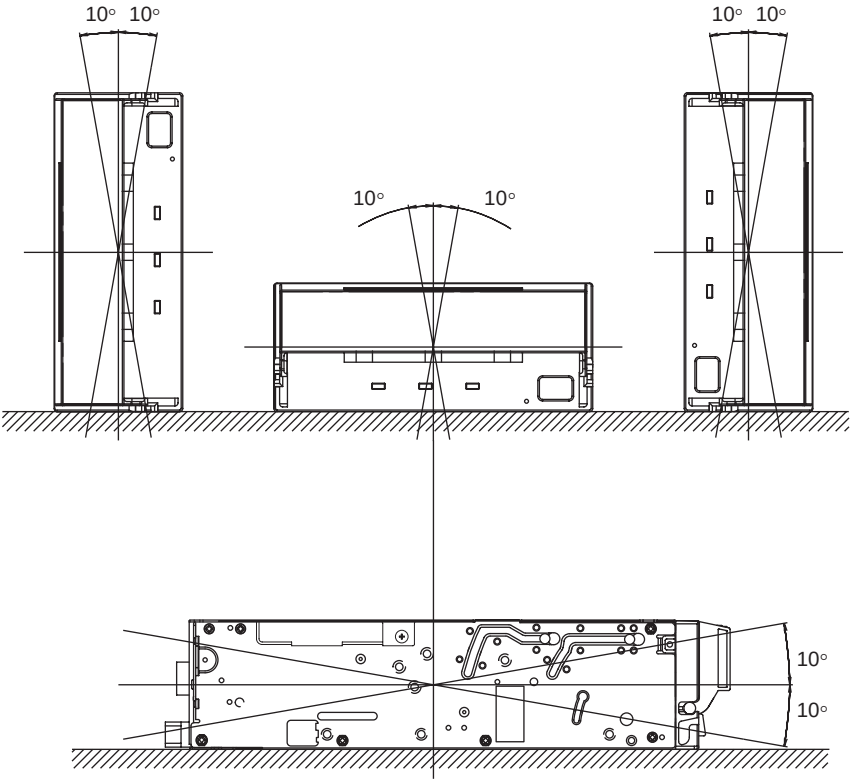
You can reconfigure the 5.25" model to the 3.5" model yourself.

1 Remove the 2 screws for each side rail.

2 Take the side rail off.



Orientation



Attaching and Removing the Dust Cover

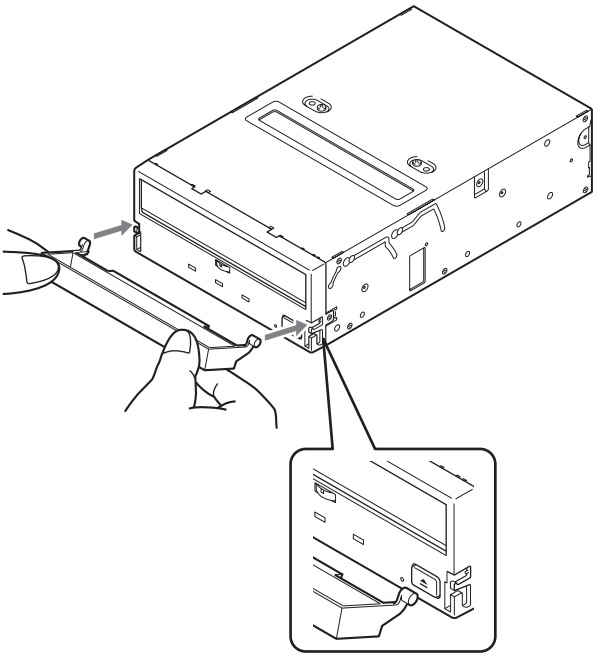
Attaching the Dust Cover

1 Align the dust cover's hinge clips (one on each side) with the pins of the drive bezel.

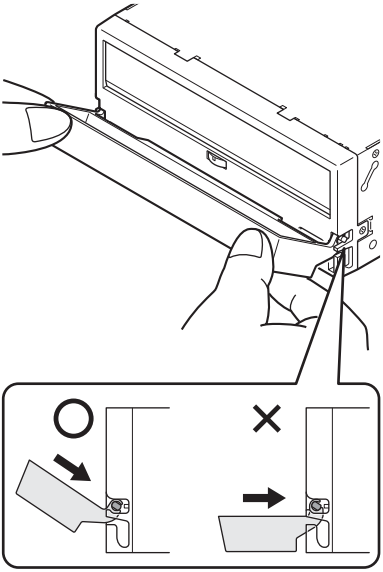
- The dust cover should be positioned so that the magnets* on the cover's back face the drive bezel.

  * This magnet does not affect the tape of the cartridge.

- Holding the dust cover at an angle as shown in the figure below, set the hinge clips on top of the bezel pins, positioning them so that they bracket the pins.



2 Press down at an angle on each side in turn until you hear the hinge clips click into place.



Caution

Do not press the dust cover in horizontally from the front. Doing so could cause the dust cover to break.

3 Close the dust cover.

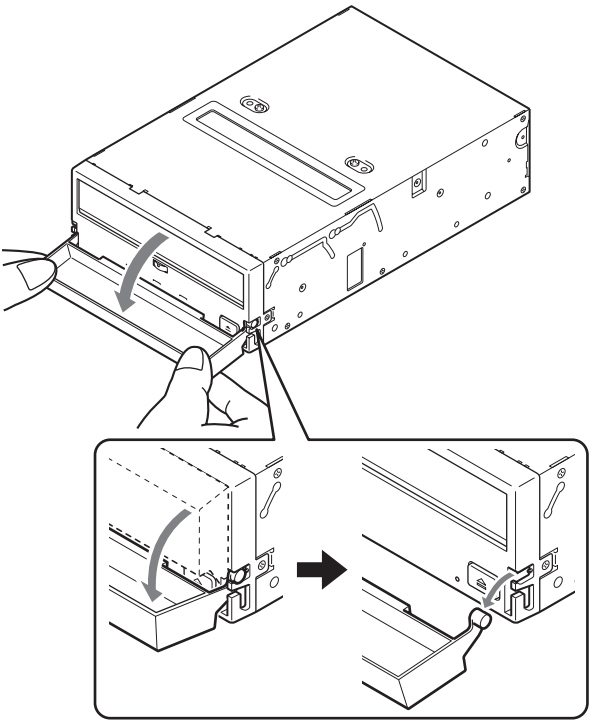
This completes attachment of the dust cover.

Removing the Dust Cover

1 Open the dust cover.

2 Holding the dust cover at both corners, carefully raise the dust cover.

The dust cover hinge clips and drive bezel pins uncouple.



Note

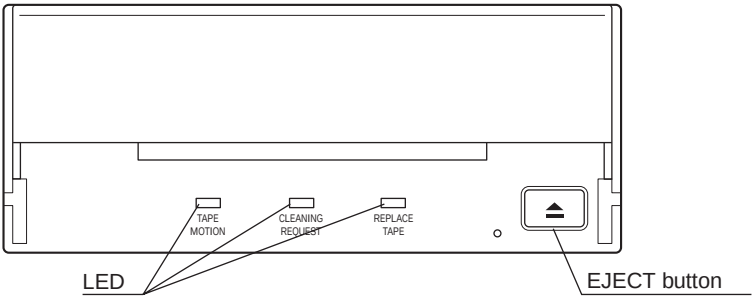
We recommend that you use the drive with the dust cover.

Operation

Location of 3 LEDs

There are three LED indications (TAPE MOTION LED, CLEANING REQUEST LED, REPLACE TAPE LED) and an EJECT button on the front panel of the unit.

Front Panel (for 3.5" Standard Height)



LED Indication for Drive Status

The LED indicators are defined as follows.

LED			
TAPE MOTION	**CLEANING REQUEST**	**REPLACE TAPE**	**Sense**
■	Independent	Independent	Tape Loaded
■□■	Independent	Independent	Tape Access in Progress (write/read)
□■□	Independent	Independent	Tape Access in Progress (others)
Independent	■	Independent	Cleaning is requested
Independent	■□■	Independent	Cleaning is Not Completed
Independent	Independent	■	Media Error Occurred
□■□	□■□	□■□	H/W Error Occurred

■ on

■□■ Slow
1 pulse (0.9 sec on/0.3 sec off)

□■□ Fast
1 pulse (0.3 sec on/0.3 sec off)

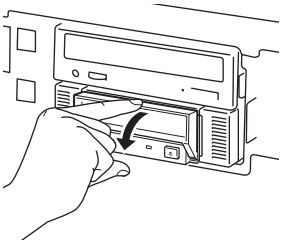
Loading a Cartridge

Note

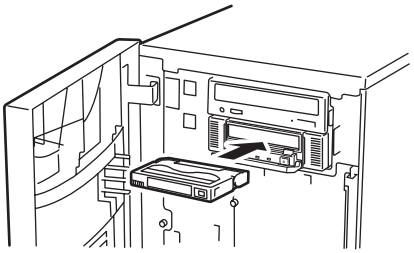
While setting the data cartridge, do not turn off the host computer. This may cause a malfunction or damage data.

1 Turn on the host computer. Check that the drive's TAPE MOTION LED, CLEANING REQUEST LED and REPLACE TAPE LED go off.

2 Open the dust cover.



3 Set the AIT data cartridge orientation as shown here and insert it into the data cartridge slot.



By inserting the data cartridge to the extent, it is automatically set in the drive and the TAPE MOTION LED lights.

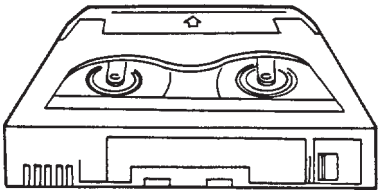
Unloading a Cartridge

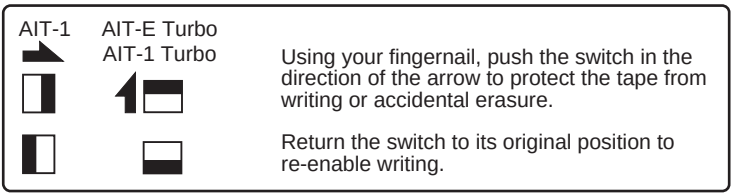
The cartridge can be removed from the SDX-450V and SDX-250V either in response to a SCSI Unload Command, or by pressing the EJECT bottom.

By pressing EJECT button, the tape is rewound and the cartridge ejected from the slot.

Write-protecting a Cartridge

Cartridges can be write-protected by sliding the tab on the back of the cartridge. In this state, data can be read from the tape but not written onto it.




AIT-1
AIT-E Turbo
AIT-1 Turbo
Using your fingernail, push the switch in the direction of the arrow to protect the tape from writing or accidental erasure.
Return the switch to its original position to re-enable writing.

Using a Cleaning Cartridge

To keep the AIT drive in top condition, clean the head as needed using a head cleaning cartridge with the AIT logo. When the head needs cleaning, the CLEANING REQUEST indicator lights.

How to Clean

1 Load the head cleaning cartridge (SDX1-CL) into the AIT drive. Cleaning starts automatically.

2 After about 15 seconds, cleaning will stop and the cartridge will be ejected automatically.

Caution

Do not rewind the cleaning cartridge and reuse it. When you reach the end of the cartridge, dispose it and buy a new cleaning cartridge with the AIT logo.

Storage Precautions

- Keep cartridges in their cases when not in the drives.
- Avoid storing cartridges in dusty locations, in direct sunlight, near heaters or air conditioners, or in humid locations.
- Do not place cartridges on dashboards or in car storage trays.

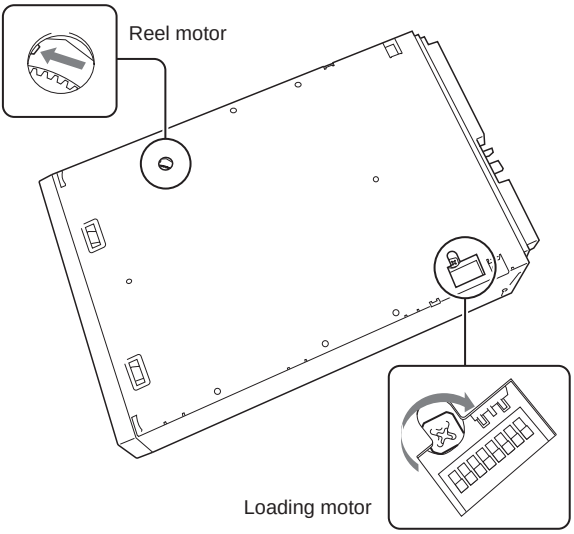
Emergency Tape Removal Procedure

1 Remove the drive from the chassis or enclosure to allow access to the bottom of the drive.

2 Remove the drive's top cover.

3 Locate the small opening in the bottom of the drive and insert the tip of a precision screwdriver so that the Loading motor shaft can be rotated.

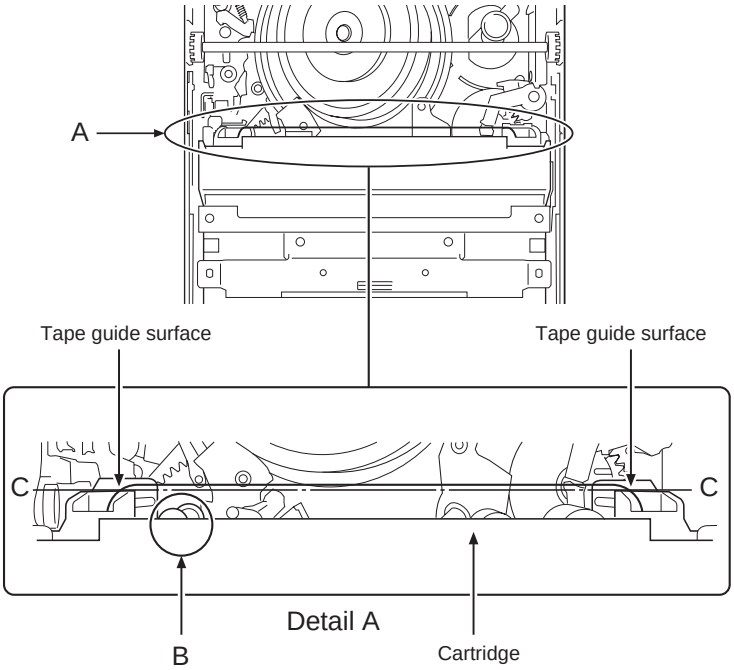
4 Rotate the motor shaft clockwise to bring the threading mechanism back to the initial position.



Emergency Tape Removal Procedure

Caution

Stop rotating the motor shaft immediately, when the guide B gets to the area below the line C-C (This line is defined by 2 circular tape guide surfaces of the cartridge). Otherwise, the gear of the drive can be damaged.



The Initial Position of the Threading Mechanism

5 Before the manual ejection procedure, tape slack must be removed in order to prevent tape damage. Rotate the gear mechanism located on the bottom of the drive counterclockwise to tighten the tape.

6 After the tape slack has been removed, continue to turn the Loading motor shaft located on the bottom of the drive clockwise with a precision screwdriver until the tape cartridge is lifted out of the drive mechanism and is ejected.

7 Return the drive to Sony for repair.

Interface Implementation

Supported SCSI Messages

Abort

Bus Device Reset

Command Complete

Disconnect

Extended Message

– Synchronous Data Transfer Request

– Wide Data Transfer Request

Identify (w/&w/o Disconnect)

Ignore Wide Residue

Message Parity Error

Message Reject

No Operation

Restore Pointers

Save Data Pointer

Supported SCSI Commands

Erase

Inquiry

Load/Unload

Locate

Log Sense

Log Select

Mode Select

Mode Sense

Prevent Allow Medium Removal

Read

Read Block Limits

Read Buffer

Read Position

Receive Diagnostic Result

Release Unit

Report Density Support

Report Luns

Request Block Address

Request Sense

Reserve Unit

Rewind

Seek Block

Send Diagnostic

Space

Test Unit Ready

Verify

Write

Write Buffer

Write Filemarks

Specifications

Product Specifications

Dimensions (not including bezel and protruding parts)

	3.5"	5.25"
Height	41.2 mm (1.62 in)	41.2 mm (1.62 in)
Width	101.6 mm (4.0 in)	146.0 mm (5.75 in)
Depth	155.0 mm (6.1 in)	155.0 mm (6.1 in)

Altitude

Operating	0 to 3048 m (0 to 10,000 ft.)

Acoustic Nois A-weighted sound pressure level

Streaming Write/Read	less than 35 dB (A)
Insert/Eject	less than 60 dB (A)

Note

The sound level meter is located 1m (3.3 ft.) in front of the center of the drive front panel.

Mass

	SDX-450V	SDX-250V
3.5"	740 g (26.1 oz.)	740 g (26.1 oz.)
5.25"	970 g (34.2 oz.)	970 g (34.2 oz.)

Temperature and Humidity Range

Temperature

Operating	5 ˚C to 40 ˚C (ΔT<10 ˚C/h) (41 ˚F to 104 ˚F (ΔT<18 ˚F/h))
Non-Operating (mech.)	– 40 ˚C to 70 ˚C (ΔT<20 ˚C/h) (– 40 ˚F to 158 ˚F (ΔT<36 ˚F/h))
Non-Operating (tape)	– 40 ˚C to 45 ˚C (ΔT<20 ˚C/h) (– 40 ˚F to 113 ˚F (ΔT<36 ˚F/h))

Humidity

Operating	20 to 80% RH, non-condensing Maximum wet bulb temperature : 26 ˚C (78.8 ˚F)
Non-Operating (mech.)	5 to 95% RH (ΔRH<30%/h) Maximum wet bulb temperature : 45 ˚C (113 ˚F)
Non-Operating (tape)	20 to 80% RH (ΔRH<30%/h)

Air-cooling Requirement

Surrounding temperature	< 40 ˚C (104 ˚F)

Clean air flow is recommended to minimize the possibility of data loss.

Power Requirements

SDX-450V

Voltage	Max Ripple	Current	
		Typical	Maximum
5 V +/– 5 %	100 mVp-p	1.1 A	1.4 A
12 V +/– 10 %	150 mVp-p	0.4 A	1.2 A

SDX-250V

Voltage	Max Ripple	Current	
		Typical	Maximum
5 V +/– 5 %	100 mVp-p	1.1 A	1.4 A
12 V +/– 10 %	150 mVp-p	0.4 A	1.2 A

Sony Contacts

For further information, please contact:

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